REMARKS

In response to the office action mailed June 1, 2005, applicant certainly appreciates the allowance of claims 11-19 and the indication of allowance of claims 2, 3 and 6-9 if amended to become independent, incorporating the requirements of the base claim and any intervening claims. Applicant has accordingly amended claim 2 to become independent and made claims 3-9 dependent on claim 2. Applicant requests affirmation from the examiner that claim 16, which the examiner indicated as being withdrawn from reconsideration, is actually allowed because it depends from allowed claim 11.

Applicant has canceled withdrawn claims 10, 20 and 21. Applicant has amended claim 1 so that it will read on all three species and added dependent claims 22-24. No additional fee should be required because of the cancellation of claims 10, 20 and 21. Applicant is enclosing Figures 1 and 2, both in a marked-up form and in a corrected form, to correct the error in the lead line for the numeral 29.

Applicant respectfully traverses the rejection of claim 1 over Helmick and respectfully requests reconsideration. Helmick's seal boss 19 is formed bit leg 13 and is eccentric relative to the axis of bearing pin 8. Cone 14 is conventional, having a seal groove surface 21 that is concentric about the axis of bearing pin 8. The clearance between seal groove 21 and seal boss 19 is smaller on the upper side than the lower side when unloaded, as shown in Figure 2. When weight is applied to the bit for drilling operations, as shown in Figure 3, the clearance between seal groove 21 and seal boss 19 is uniform around bearing pin 8. While being rotated, with or without weight, the clearance does not change at any particular point because the eccentric surface is located on the non-rotating seal boss 19. Even though the volume of the seal gland

differs from an upper side to a lower side while unloaded, the volume does not change at any particular point at least once per revolution of the cone.

Claim 1 as amended requires that the bearing pin annular surface be concentric to the axis of the bearing pin. In Helmick, the bearing pin annular surface is eccentric. Claim 1 requires that the cone have an annular surface with at least one portion spaced closer to the annular surface of the bearing bit than at least one other portion, so that rotation of the cone causes a reduction at each point around the clearance as said at least one portion rotates around the bearing pin. This requirement also distinguishes over Helmick.

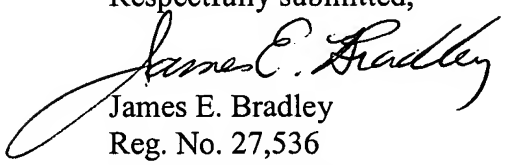
Claim 22 covers applicant's first and second embodiments, which are shown in Figures 2 and 5. New claim 22 specifies that the annular surface of the cone is eccentric relative to the axis of the bearing pin, thus also distinguishes Helmick. In Figure 2, the eccentric annular surface of the cone comprises mouth 40 in Figure 3. In Figure 5, the eccentric surface in the cone comprises eccentric portion 63.

New claim 23 covers applicant's second embodiment, which is shown in Figure 5. Claim 23 states that the annular surface of the bearing pin is the cylindrical surface of a seal boss, which is exemplified by surface 64 in Figure 5. Claim 23 states that the annular surface of the cone is eccentric and spaced radially from the annular surface of the bearing pin.

Claim 24 covers the third embodiment, which is Figure 6. Claim 24 states that the annular surface of the bearing pin comprises a machined surface, exemplified by surface 83 of Figure 6. Claim 24 states that the annular surface of the cone comprises a backface, which is exemplified by numeral 81 in Figure 6. The claim states that said at least one portion comprises at least one vane on the backface, which is indicated by the numeral 85.

Applicant respectfully submits that the application is now in condition for allowance and respectfully requests favorable action.

Respectfully submitted,



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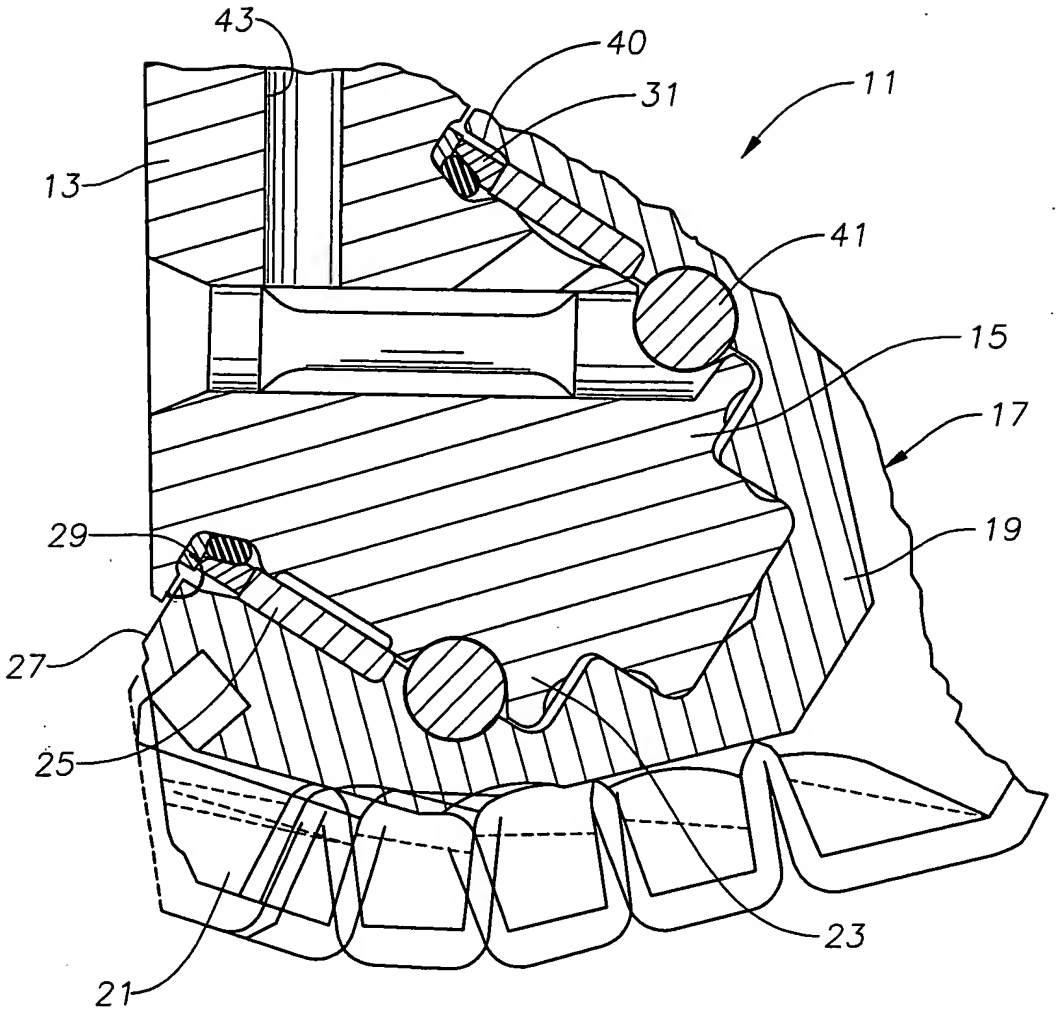

Fig. 1

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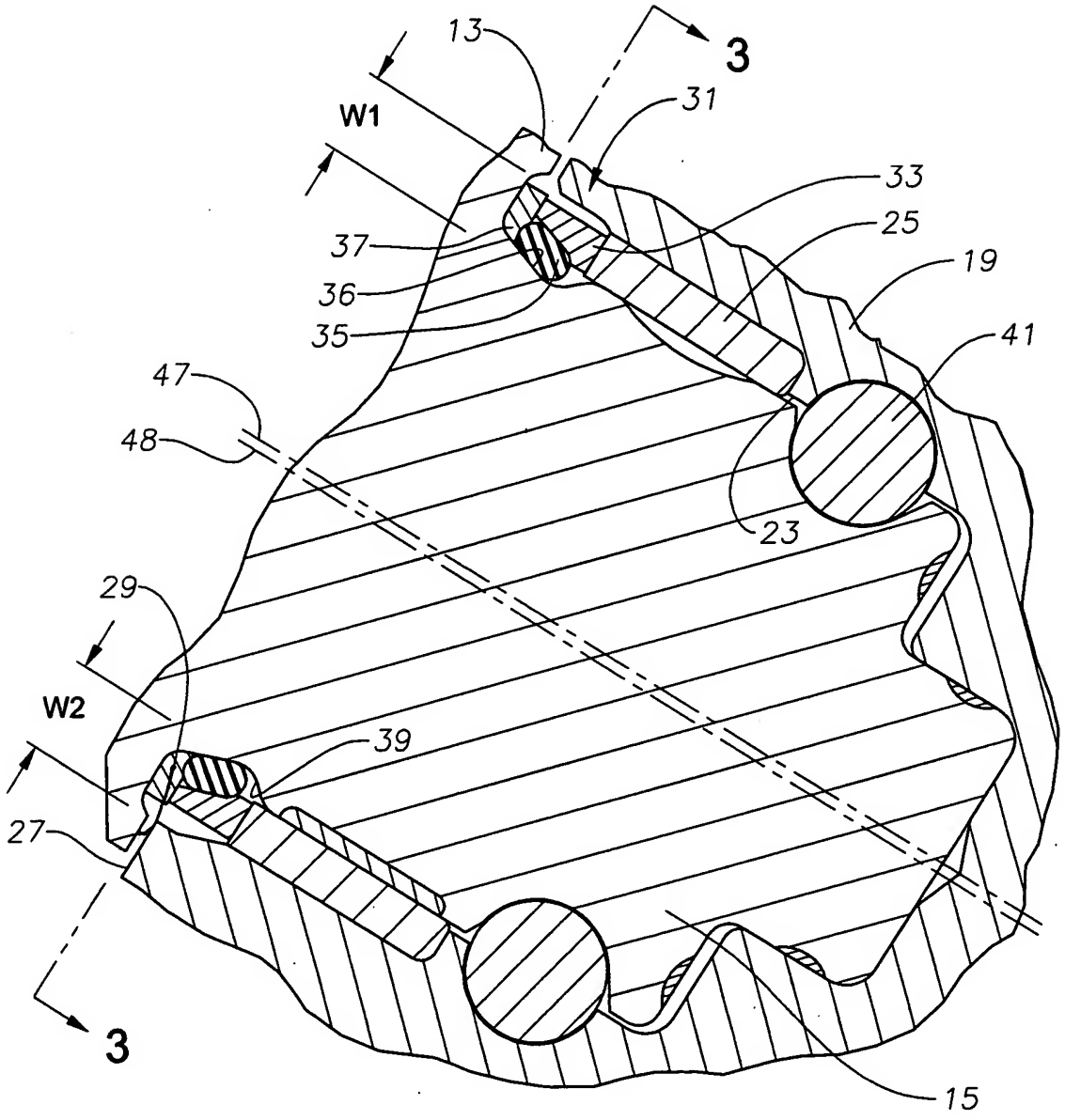

Fig. 2